

Remarks/Arguments

Claims 1 and 15 have been amended to make explicit what applicants believe were implicit; that is, each support cell supporting a single fuel element. In addition, it was noted that both fuel rod and fuel element were employed in both claims. Though the two terms are used interchangeably in the art, it was better that the terms be employed consistently and the mention of 'fuel rod' has been changed to read 'fuel element'. In addition, a clarification was inserted that the springs continuously contact and support the fuel elements.

The objections to the drawings under 37 CFR §1.83(a) and the claims under 35 USC §112 in Paragraphs 1-5 of the Office Action have been fully addressed in a petition to the Commissioner accompanying this response. Applicants respectfully disagree with the position taken by the Examiner and hereby petition to withdraw these objections. No further amendments to the drawings are believed necessary to satisfy either 37 CFR §1.83(a) or 35 USC §112 to place the drawings and claims in compliance.

With regard to Paragraph 6 of the Office Action, the Examiner is advised that each of the claims was commonly owned by the current assignee at the time of their conception.

In Paragraph 8 of the Office Action, Claim 15 is rejected under 35 USC §102(b) as being clearly anticipated by Thomazet et al. (US 4,804,516). The Examiner equated the upper grids 10-16 of Thomazet et al. with applicants' auxiliary grid and the lower grids 6-9 with applicants' main support grids. However, Thomazet et al. clearly does not show the auxiliary grids sandwiched between the main support grids as now claimed in applicants' Claim 15. Accordingly, Claim 15 satisfies the requirements of 35 USC §102(b). This amendment was made to forward prosecution and is not intended to detract from the distinguishing arguments made in the response filed by applicants on May 5, 2005, which distinguish over the Thomazet et al. reference for the reasons stated therein. Accordingly, Claim 15 should now be allowable.

In Paragraph 9 of the Office Action, Claims 1-5, 7, 9, 14 and 15 are rejected under 35 USC §102(b) as being clearly anticipated by Canat et al.(1)(US 5,183,629). In support of this rejection, the Examiner stated:

Note Fig. 1 in which the claimed main support grids read on grids 24 and the auxiliary grids read on grids 26. Col. 5, lines 34+, refers to an embodiment of the main support grids 24 wherein the bosses fitted to the grids 24 are not desired to always be in contact with the fuel rod (that is, they mainly serve to limit bending of the fuel rods).

The Examiner felt that these limitations read directly on applicants' claim limitation of the second set of dimples and/or springs on the auxiliary grids having a larger contact area with the fuel rods than that of the main support grids. Applicants' Claims 1 and 15 now specifically require these springs to be in continuous contact with the fuel elements, which the Examiner recognizes is contrary to the teachings of the Canat et al. reference. The Canat et al. reference, in col. 4, states:

The assembly of the invention shown in Fig. 1 also includes additional grids 26 [which the Examiner equates with applicants' auxiliary grid] for mixing the streams of coolant and for making temperature more uniform, i.e., grids that have a thermohydraulic function only. These grids are generally placed solely in the hottest portions of the assembly, i.e., between the downstream structural grids. The assembly shown in Fig. 1 has three mixing grids 26, none of which has a belt and all of which perform a thermohydraulic function only, each mixing grid being placed in a gap between two structural grids 24.

The reference goes onto state in col. 4, line 50, that:

To prevent the fuel rods 36 from coming into contact with the mixing vanes 32 (only a few fuel rods are shown in Fig. 2), abutment bosses 38 are provided on the plates 28 and 30 and project into each of the cells occupied by a fuel rod 36. They project relative to the remainder of the plate by an amount small enough to leave diametrical clearance enabling the fuel rods 36 to slide freely.

Thus, the claim limitations in Claims 1 and 15 clearly distinguish over Canat et al. (1). Furthermore, Claim 14 calls for an outer strap, while the above-cited section of Canat et al. specifically states that "the assembly shown in Fig. 1 has three mixing grids 26, none of which has a belt". Accordingly, the dependent claims patentably distinguish over Canat et al. (1).

In Paragraph 10 of the Office Action, Claims 1-5, 7, 9, 14 and 15 are rejected under 35 USC §102(b) as being anticipated by Anthony (US 4,058,436). Applicants incorporate the arguments presented in the response of May 5, 2005. In addition, as the Examiner has noted, the reference to Anthony includes four fuel rods in each support cell of the center grid 18 that the Examiner equates with applicants' auxiliary grid. Applicants' claims clearly and unambiguously identify that each fuel element is supported within its own support cell and each support cell supports a single fuel element. Accordingly, Claims 1 and 15 further distinguish over Anthony and comply with the requirements for patentability of 35 USC §102(b). Additionally, Claim 4 requires adjacent ones of the plurality of auxiliary grids share one main support grid between

them. Anthony teaches employing only a single grid 18, which the Examiner equates to applicants' auxiliary grid. Furthermore, as applicants' argued in the response of May 5, 2005, Anthony neither describes, teaches or shows the limitations of Claim 7 and 9. The remaining claims depend on Claim 1 and distinguish as well for the reasons noted above for the claims upon which they depend.

In Paragraph 11 of the Office Action, Claim 10 is rejected under 35 USC §103(a) as being unpatentable over Anthony (US 4,058,436) in view of Leclercq (US 4,844,861). Anthony has been applied as addressed above. The Examiner asserted Leclercq shows it is old and advantageous in the art to include mixing vanes on the main support grids and to so modify Anthony was obvious.

It should be noted that Anthony does not teach mixing vanes or fins on any of the grids, while Leclercq teaches employing fins on the median grids. Employing fins on the median grids actually teaches away from applicants' invention, which does not employ mixing vanes on the auxiliary grids in the mid-third region of the core. Accordingly, Claim 10 distinguishes over the references for the additional limitations that it introduces. Since the withdrawn Claims 11 and 12 are indirectly dependant upon a generic allowable independent Claim 1, they should be similarly allowable.

Thus, applicants have shown where applicants' Claims 1-5, 7, 9-12, 14 and 15 patentably distinguish over the references considered either singly or in combination and satisfy the formal requirements of the patent laws. Accordingly reconsideration, allowance and passage to issue of this application are respectfully requested.

Respectfully submitted,



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